

SPECIFICATION

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[A lifting and telescoping dolly]

Cross Reference To Related Applications

A number of lifting devices have been suggested in the past for limited lifting and transporting devices. One such device is disclosed in U.S. Pat. No. 5,358,217 issued to Dach. This patent describes a four wheeled dolly for lifting lawn and garden tractors by which can be lifted by a hydraulic jack unit. Another somewhat similar prior art lift and rotate device is disclosed U.S. Pat. No. 5,839,876 issued to McCarthy and Bacella. The McCarthy and Bacella device comprises a 4-wheeled dolly having a lift and rotate assembly. Still another hand dolly for vertical lifting and transporting small loads is described in U.S. Pat. No. 5,114,118 issued to Schrader. This apparatus includes a 4-wheeled wheeled movable frame and a frame designed to lift and transport light loads. There are no transporting and telescopic devices for lifting of hot water heaters from floor to attic. A lack of functionality of many of the prior art lifting and transport devices is that the devices tend to be of very heavy construction which precludes the use as a limitation of the dollies uses. Another drawback of certain of the prior art telescopic devices is that they are bulky making them difficult to transport and store. Further, while the devices are usable for telescopic lifting or transporting devices, they do not combine the ability to lift hot water heaters into or out of attics for installing, removing and transporting.

Background of Invention

[0001]

1. Field of the Invention The present invention relates generally to article telescopic lifting and transport devices. More particularly, the invention concerns a dolly-like apparatus which is specially designed for use in telescopic lifting and transporting hot water heaters into attics. 2. Discussion of the Prior Art Article telescopic lifting and transport devices such as two wheeled transport dollies are well known in the art. However, such devices are not well suited for telescopic lifting and

transporting articles such as hot water heaters into attics. In this regard, because of the weight of the hot water heaters and their location of installation, telescopic lifting of the hot water heaters for repair or replacement is often cumbersome, difficult, and unsafe. For example, both commercial and residential water heaters are heavy, difficult to grip and exhibit a tendency to fall on workman while lifting into attic. Therefore, as a general rule, moving and installation of such hot water heaters is a two-person or more operation so that the hot water heaters can be lifted and at the same time safely balanced. In the case of a hot water heater because of its weight and the location, it is often necessary to attach a pulley to cross rafters with a rope to pull or lower the hot water heater into place. This is inefficient, difficult and unsafe. The thrust of the present invention is to overcome the prior art difficulties of handling hot water heaters by providing a specially designed, easy-to-use article telescopic transport dolly which can be used by one person to safely and easily lift and transport of such hot water heaters to attic location. The improved dolly includes strategically positioned, vertically adjustable telescopic lifting frame and a cooperating article stabilizing means which permits the hot water heaters to be lifted with minimum effort while they are being maintained in a stable orientation on the dolly. Both the telescopic lifting frame and the stabilizing means are adjustable so that upon moving the lifting plate of the apparatus into a downward operating position, the dolly can be used in a traditional manner such as a conventional two wheeled dolly. When the telescopic lifting frame, the stabilizing means and the lifting plate are in their retracted position, the dolly assumes a low profile configuration for easy storage and transport. A number of lifting devices have been suggested in the past for limited lifting and transporting devices. One such device is disclosed in U.S. Pat. No. 5,358,217 issued to Dach. This patent describes a four wheeled dolly for lifting lawn and garden tractors by which can be lifted by a hydraulic jack unit.

[0002] Another somewhat similar prior art lift and rotate device is disclosed U.S. Pat. No. 5,839,876 issued to McCarthy and Bacella. The McCarthy and Bacella device comprises a 4-wheeled dolly having a lift and rotate assembly. Still another hand dolly for vertical lifting and transporting small loads is described in U.S. Pat. No. 5,114,118 issued to Schrader. This apparatus includes a 4-wheeled wheeled movable frame and a frame designed to lift and transport light loads.

[0003] There are no transporting and telescopic devices for lifting of hot water heaters from floor to attic. A lack of functionality of many of the prior art lifting and transport devices is that the devices tend to be of very heavy construction which precludes the use as a limitation of the dollies uses. Another drawback of certain of the prior art telescopic devices is that they are bulky making them difficult to transport and store. Further, while the devices are usable for telescopic lifting or transporting devices, they do not combine the ability to lift hot water heaters into or out of attics for installing, removing and transporting.

Summary of Invention

[0004] It is an object of the present invention to provide an improved article telescopic transport dolly which is specially designed for telescopic lifting and transporting hot water heaters in and out of attics. Another object of the invention is to provide an improved article transport truck of the aforementioned character; which includes uniquely positioned, adjustable telescopic lifting frame which can be used to engage and conveniently lift hot water heater with minimum effort and without damaging the fixture. Another object of the invention is to provide an improved article transport truck of the character described in which the telescopic lifting frame and the lifting plate of the device can be adjusted relative to the dolly frame so that they can be conveniently moved from an fully telescopic position extending, operating configuration into a stowed position to enable the dolly to be conveniently stored and transported. Another object of the invention is to provide an improved article transport truck as described in the preceding paragraph which includes novel braking system to preclude horizontal movements of the wheels during the lifting and installation operation.

[0005]

Another object of the invention is to provide a telescopic frame to extend to attic for restrain ably engaging and stabilizing the hot water heater during telescopic lifting and transport. Another object of the invention is to provide an improved article transport dolly which is lightweight, easy to use and is of a durable and rugged construction. Another object of the invention is to provide an improved article transport dolly of the class described in the preceding paragraphs which is specially designed so that it can be conveniently stored and transported. Another object of the

invention is to provide an improved article transport dolly which is of simple construction, embodies a minimum number of moving parts and can be inexpensively manufactured and marketed.

Brief Description of Drawings

- [0006] These and other features of the invention will become more apparent from the following description in which reference is made to the aped drawings, wherein: FIG. 1 is a perspective view of a first embodiment of the lift truck apparatus constructed in accordance with the teachings of the present invention.
- [0007] FIG. 2 is a generally perspective view of the lift truck similar to FIG. 1 but showing the Retractable arms of the hand truck in an up-raised position and the braking system engaged.
- [0008] FIG. 3 is a cross-sectional view of the lift truck illustrated in Fig. 1.
- [0009] Fig. 4. is a side elevation view as shown in FIG. 1.
- [0010] FIG 5. is a back plan view of the lift truck illustrating the retractable legs in their stowed position illustrated in FIG. 1.
- [0011] FIG 6 is a back view of the lifting apparatus illustrated in FIG 1.
- [0012] FIG 7. is a cross-sectional view partially in section of the lifting apparatus illustrated in FIG. 1.
- [0013] FIG 8. is a perspective view of a second embodiment of a lifting apparatus constructed in accordance with the teachings of the present invention.
- [0014] FIG. 9 is a cross-sectional view of the lifting apparatus illustrated in FIG. 8.
- [0015] FIG 10. is a cross-sectional view of the lifting apparatus illustrated in FIG. 8.
- [0016] FIG 11. is a side view of the lifting apparatus illustrated in FIG. 8.
- [0017] FIG 12. is a back view of the lifting apparatus illustrated in FIG 8 with vertical lifting point attachments.
- [0018] FIG 13 is a front view of the lifting apparatus illustrated in FIG 8.

[0019] FIG 14 is cross-sectional view of the lifting apparatus illustrated in FIG 8.

Detailed Description

[0020]

The preferred embodiment, lifting apparatus generally identified by reference numerals 21 and 23, will now be described with reference to FIGS. 1 through 14. FIGS. 1 through 7 illustrate a first embodiment 21. FIGS. 8 through 14 illustrate a second embodiment 23. First embodiment 21 and second embodiment 23 arrange the same basic components in alternative manners, as will hereinafter be further described. Referring to FIGS. 1 through 14, lifting apparatus 21 and 23 both include a movable frame 11 that comprises of two wheels 18, a braking system 15, and extending stabilizing legs 32. Movable frame 11 extended stabilizing legs 32 attached to plate for support of legs which is attached to frame 11 which have lever form locking mechanisms 33, which are supported by rotatably mounted wheels 36. Wheels 36 and 18 facilitate movement of movable frame 11 throughout a working area. Two L-Brackets 12 vertically mounted on side supports 14 from movable frame 11. Cross members 10 are secured to side supports 14 mounted on moveable frame 11. Two vertically mounted handles 38 on back of cross members 10, supported from movable frame 11. Two flat steel supports 44 for horizontally mounted axel 20 for support of wheels 18. A substantially vertically mounted support bracket 22 for stabilizing brake axel 17. Three evenly spaced small pieces of C-Channel 15 and 16 attached on braking axel 17 by applying pressure to brake foot petal 16 the other two pieces of c-channel mounted above wheels 18 press against wheels and braking arm 51 locks over axel for support of wheels 20 with the guidance of vertically mounted guides for braking arm 47 with tension provided by springs 40 lock wheels 18 resulting in immobilizing the lifting and telescopic dolly. C-channel for lower frame 11 has multiple holes 42 in top of left and right c-channels when matched with holes in extended telescopic frame 7 by cranking hand crank 52 which is connected by cable 49 through pulley 50 to lower portion of telescopic frame 7 and insertion of safety locking pins 13 allows for locking telescopic frame 7 into desired height. Support wheels mounted in top of C-Channel 11 and lower portion of c-channel of telescopic frame 7 provides support and stability for telescopic frame when extended. Telescopic frame 7 is horizontally supported by cross members 9. Two L-Brackets 8 vertically

mounted on side supports telescopic frame 7 for upper support of Lift plate 31. Support for Lift plate 31 is provided by 3 sets of wheels 29 on each side on back of lift. Outer set of wheels 29a secures lift plate 31 to lower L bracket 12 which in turn secures it to lower frame 11. Middle set of wheels 29b supports the weight of lift plate 31 and load 41 on top edge of c-channels 11 and 7. Inner set of wheels 29c support for lift plate 31 to L-bracket 8 on telescopic frame 7. Lift plate 31 is elevated by Hand crank 1 which is attached to cable 27 which is attached to upper portion of Lift plate 31. Lift plate supports hot water heaters 41 which are secured to lift 31 by support straps 39. Hand crank 1 is fastened to support platform 2 which is attached to neck support 3 which is connected to horizontal support 6. C- Channel for support arms 4 is attached to horizontal support 6 which is top support for C-channels 7. Retractable support arms 5 are attached to c-channel support 4 supporting lifting and telescoping dolly in extended position. Retractable support arms when extended are placed of rafters in attic to stabilize lifting and telescopic dolly. After installation of hot water heater 41 lift is lowered to bottom dolly by reverse cranking of hand crank 1. Handle 38 is mounted on lever for retraction of arms 37 which is connected to retractable support arms 5 by cables 46 through a series of pullies 25 which tension applied by springs 40 which are attached to retractable support arms 5 and c-channel for support 4.